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Different Growing Media Used in Bougainvillea

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***Abstract*—** This study was conducted to determine the effects of different media in the growth and development of bougainvillea. In particular, the study aimed to evaluate the growth parameters in terms of roots and leaves. They were randomly distributed in four treatments, replicated three (3) times and arranged in a complete randomized design (CRD). The treatments used in the study are: A-fine River sand, B-carbonized rice hull, C-mud clay, and D-decomposed rice hull. The results show that there is a significance difference on the number of leaves among treatment means. Result showed that plants in treatment C which is mud clay gave the highest number of leaves with a mean of 27 leaves, followed by treatment D, 25 leaves and the lowest was obtained by treatment A and B with a mean of 11 leaves. In terms of roots, result shows that treatment B which is carbonized rice hull give the highest number of functional roots with the mean of 24, followed by treatment A which is fine river sand with the mean of 23, treatment C which is mud clay with the mean of 15, and treatment D, which is decomposed rice hull. The study shows that using different growing media will affect bougainvillea's growth and development.

***Keywords*—** bougainvillea, different media, mud clay, carbonized hull, fine river sand, decomposed rice hull.

I. INTRODUCTION

Plants gardener preferred to use cuttings of stems or terminal buds for mass production because of its easiness and simplicity. Bougainvillea Glabra is called as "paper flower" because the bracts are thin and papery. The fruit is narrow five lobed achene. Bougainvillea are relatively Pest – free plants but they may be susceptible to worms, snails and aphids. The larva of some Lepidoptera species also use them as food plants, for example, the Giant Leopard Moth (Hypercompescribonia).

Bougainvilleas are primarily propagated by stem cuttings, but lack of capability to form adventitious roots by cuttings occurs routinely and is a hindrance for the vegetative propagation.[1] Bougainvillea is a lush evergreen subtropical vine has a spreading and round plant habit with a height and spread of up to 20 feet[2] and climbing plant structure used for landscape, green house cultivation as a pot plant.[3] It is used in bulk plantings, as flowers or bushes, and as ground cover.[4] Vegetative propagation of ornamental plants through stem cutting is one of the cheapest and, sometimes, does the only way exist for massive production.

However, based on normal situations, wide variability is noticed in different cultivars of the same species; while some cultivars root easily, others are either hard or fail to grow root. In Bougainvillea, the success of propagation by stem cutting is very limited. Under normal conditions, mostly growers observed poor rooting percentage.[5]

Problems of containers growing plants which relate to the growing media are often due to physical characteristics of the soil. Most types of soils tend to become compacted when used in containers. This compaction is often accompanied by reduction in water holding capacity, drainage, aeration, water infiltration rate and perhaps roots penetration. So, growing media is a key material to produce high quality, container grown plants.[6] The higher root formation can be attributed by higher water holding capacity and good aeration of rooting media. Mostly aeration is indeed for root development.[7] Different types of rooting media and their characteristics are utmost important for quality of rooted cuttings. Cuttings of many species root successfully in a variety of rooting media, but the rooting performance in terms of both number of roots and rooting percentage may be greatly influenced by the type of rooting medium used.[8]

The aim of this study is to determine the effects and growth of bougainvillea cuttings in different media.

II. MATERIALS AND METHODS

Materials

The bougainvillea cuttings, fine river sand, decomposed rice hull, rice hull as mulching, carbonized rice hull, mud clay, 135cm diameter conical pot, boiled water, plastic chambers, record notebook, clips ad pen are the materials used in the study. The bougainvillea cuttings was taken from one of the flower garden at Magdalo, Banate, Iloilo. The study was conducted last October 2021 at Magdalo, Banate, Iloilo.

Gathering of media

The planting materials used in the study such as fine river sand, decomposed rice hull, carbonized rice hull and mud clay are gathered in the locality.

Potting media

This was done by putting different media separately from bottom on the 135cm conical plastic pots a week before the planting process.

Treating the media

The planting Medias are separately sun dried and poured out with boiling water for sanitation.

Experimental treatment and design

The experiment was laid out in complete randomized design (CRD) with four replications and three treatments. The treatments are distributed as follows: A – fine river sand, B – carbonized rice hull, C – mud clay, D – decomposed rice hull. The 10 inches plant spacing was established as well.

Preparation of planting materials

The planting materials are gathered in the locality. Bougainvillea cuttings of pencil size were cut into 6 inches long and all leaves are removed to avoid fungal development.

Planting of cuttings

The cuttings are planted right away in the treatment pots after the media has cooled down from sanitation process.

Care and Management

The experimental area was kept away from weeds by hand weeding. Water was made available at all times when it is needed.

Data Gathering

- **Number of Functional Leaves** – this was done by counting the number of leaves per cutting after 30 days or 1 month until the termination of the study.
- **Number of Functional Roots** – this was done by counting the functional roots per cutting after 30 days or 1 month until termination of the study.

Statistical Analysis

The data was computed using the analysis of variance of a completely randomized design (CRD) at 5% level of significance.

III. RESULTS

The observation, analysis, and interpretation of data on the effect of different growing media on the growth of Bougainvillea cuttings were presented. The data was subjected to analysis of variance. Tables are presented to support to the results discussion.

Number of Leaves 30 Days or 1 month after planting

Table 1 shows the average number of leaves of Bougainvillea cuttings at thirty days or 1 month after planting. Results shows that plants in treatment c which is mud clay gave the highest number of functional leaves with the mean of 27 leaves followed by treatment D:25, and the lowest was obtained by treatment A and B with the mean of 11 leaves.

Table 1: *Shows the Average Number of Leaves of Bougainvillea cuttings as affected with the different media 30 days or 1 month after planting.*

Different treatments	REPLICATIONS			
	I	II	III	Treatment Mean
A	7	0	4	11
B	6	4	1	11
C	0	10	17	27
D	7	11	7	25

Statistical analysis revealed significant differences on the number of leaves 30 days after planting among treatment means. The data shows that using different growing media on the growth and development of Bougainvillea affects the number of leaves 30 days or 1 month after planting.

Table 2: *Shows the Average Number of Roots of Bougainvillea cuttings as affected by the different growing media 30 days or 1 month after planting.*

Different treatments	REPLICATIONS			
	I	II	III	Treatment Mean
A	7	8	8	23
B	9	7	8	24
C	6	3	6	15
D	3	2	6	11

Table 2 shows the results that treatment B which is carbonized rice hull gave the highest number of functional roots with the mean of 24, followed by treatment A which is fine river sand with the mean of 23, then treatment C which is mud clay with the mean of 15, and treatment D with the mean of 11 which is decomposed rice hull.

Based on the results presented there is significant differences on the number of functional roots at 30 days after planting among treatment means. The test showed that using different growing media will affect the growth of bougainvillea and its development.

CONCLUSION

The results of the study shows that using different growing media in bougainvillea had significantly differences and significantly affected the number of roots and leaves in thirty (30) days or one (1) month after planting. It is concluded that in terms of root growing carbonized rice hull is much better compare to other growing media. While, in terms of leaves study revealed that mud clay have the highest number of leaves compare to other growing media used.

RECOMMENDATION

Based on the results of the study, it is recommended that using of carbonized rice hull can have more leaves to grow bougainvillea and mud clay can also give a high number of roots. It is also recommended that further study can be conducted using different growing media by other species of plants propagation.

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